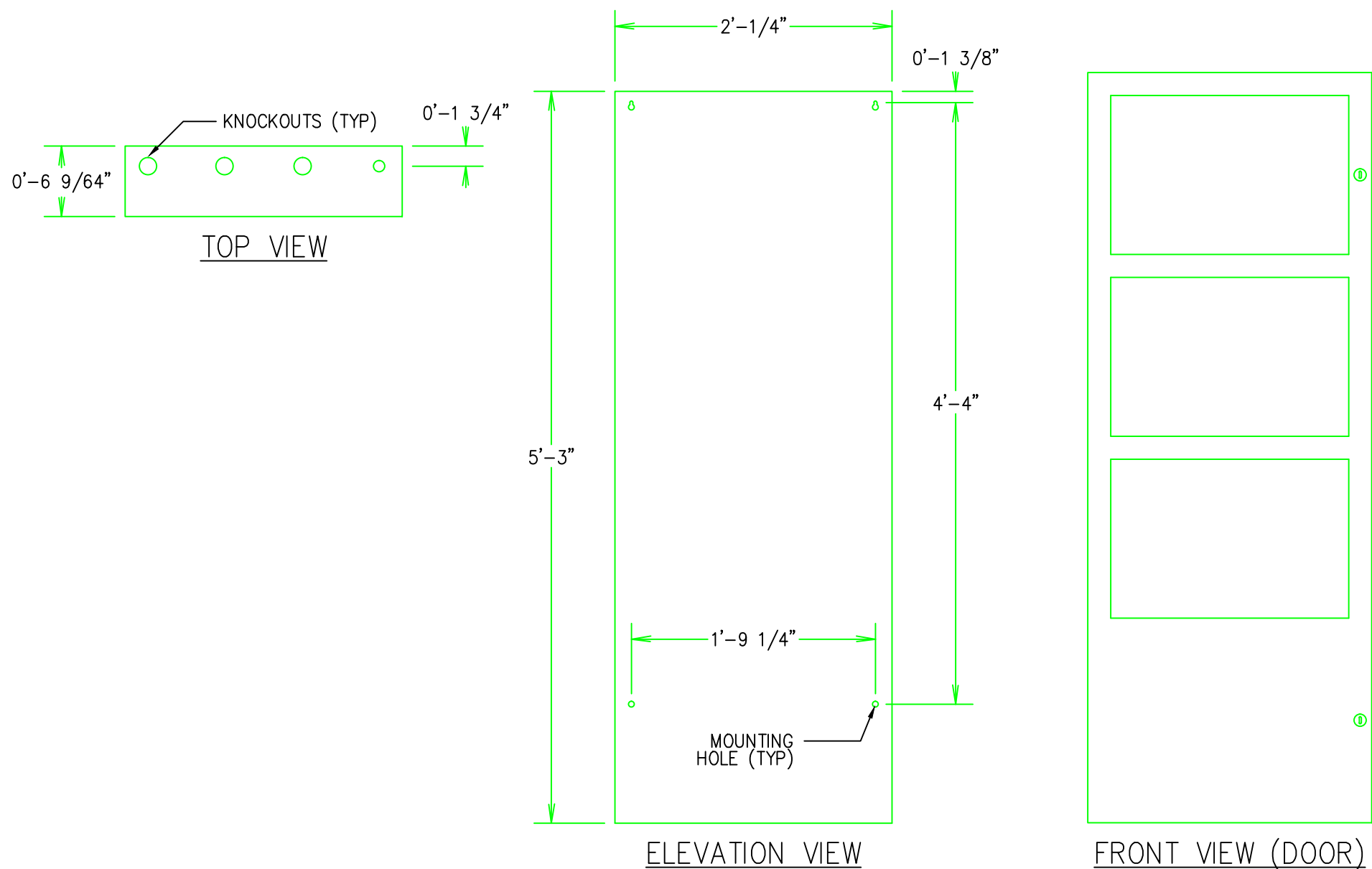


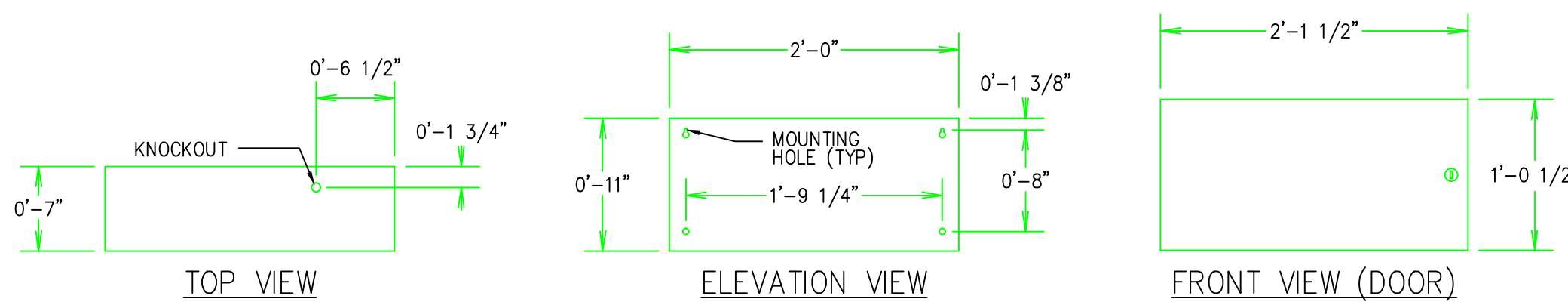
FIRE ALARM SYSTEM GENERAL NOTES

- THIS DESIGN PROVIDES A FIRE DETECTION AND FIRE ALARM SYSTEM FOR THE MOLECULAR FOUNDRY. THE DESIGN PROVIDES A NEW SIEMENS CERBERUS MXL FIRE ALARM CONTROL UNIT (AS THE BUILDING'S REPLACEMENT CONTROL UNIT (NO WALK BEHOLD BE ACCEPTED), AREA-WIDE PHOTOELECTRIC SMOKE DETECTORS (SOME FOR ELEVATOR CAPTURE AND RECALL), DUCT-TYPE SMOKE DETECTORS (FOR UTILITY BUILDING HVAC FAN SHUTDOWN), HEAT DETECTORS (FOR ELEVATOR POWER SHUT TRIP), HIGH SENSITIVITY SMOKE DETECTION (CLEAN ROOM SITES), LAB BUILDING SUPPLY FAN UNITS, AND CLEAN ROOM FAN UNIT WATER FLOW AND VALVE POSITION SUPERVISION, AND AUDIBLE, AUDIBLE/VISUAL, AND VISUAL NOTIFICATION APPLIANCES. ALL INITIATING DEVICES & NOTIFICATION APPLIANCES SHALL BE COMPATIBLE WITH THE NEW SIEMENS CERBERUS MXL FIRE ALARM CONTROL UNIT (FACU). THE DEVICES AND APPLIANCES SHALL BE PROVIDED AND INSTALLED AS INDICATED IN THE DRAWINGS. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 72, NATIONAL FIRE ALARM CODE, AND THE SYSTEM SHALL BE IN COMPLIANCE WITH THE MANUFACTURER'S LISTINGS AND APPROVALS.
- 2) ALL FIRE ALARM SYSTEM RANGEWAY (E.G. CONDUIT) SHALL BE PROVIDED IN ACCORDANCE WITH THE UNIVERSITY'S STANDARDS AND THESE CONTRACT DOCUMENTS. ALL WIRING SHALL BE ROUNDED ANGLES, UNLESS ACCEPTED BY THE UNIVERSITY. CONDUIT ROUTED ABOVE DROP CEILING SYSTEMS SHALL BE INSTALLED AT AN HEIGHT PERMITTING THE EASY REMOVAL OF THE CEILING TILE (E.G. CONDUIT SHALL NOT BE INSTALLED ABOVE THE TILE TO PREVENT EASY LIFTING FOR ACCESS). EXPOSED CONDUIT IN FINISHED AREAS MAY BE PAINTED BY THE UNIVERSITY. CONDUIT IN UNFINISHED AREAS MAY BE UNPAINTED.
- 3) THESE DRAWINGS ARE DIAGRAMMATIC IN THAT EXACT DEVICE, APPLIANCE, AND EQUIPMENT LOCATIONS, CONDUIT ROUTING, CONDUIT SUPPORT AND CONSTRUCTION DETAILS ARE TO BE DEVELOPED BY THE SUBCONTRACTOR.
- 4) THE RISER DIAGRAMS ARE DIAGRAMMATIC AND REPRESENT FEASIBLE CONNECTIVITY. REMOTE POWER SUPPLIES ARE SHOWN. THE SUBCONTRACTOR MAY MODIFY THE CONNECTIVITY TO SUIT FIELD CONDITIONS PROVIDED THAT THE NOTIFICATION APPLIANCE AND SIGNALING LINE CIRCUIT LOADS DO NOT EXCEED THOSE SPECIFIED IN THE LISTINGS AND APPROVALS FOR EACH MANUFACTURER'S PIECE OF EQUIPMENT.
- 5) THE FACU AND ALL FIRE ALARM POWER SUPPLIES SHALL BE LOCATED AS SHOWN IN THE DRAWING (5TH FLOOR FIRE CONTROL ROOM) AND A REMOTE COMMAND CENTER (RCC-2) SHALL BE PROVIDED AND INSTALLED IN THE 1ST LEVEL HEADWAY (AS SHOWN IN THE DRAWINGS). BOTH THE MXL AND RCC-2 SHALL BE INSTALLED AT A HEIGHT SUCH THAT THEIR VISUAL DISPLAYS ARE AT A HEIGHT OF 5'-6". THE MXL SHALL COMMUNICATE TO AN EXISTING MXL CONTROL UNIT LOCATED IN BUILDING 66. THE NEW SIEMENS NET 2 NETWORK INTERFACE CARD IN THE NETWORK CONTROL UNIT. THE SUBCONTRACTOR SHALL PROVIDE THE NECESSARY AND APPROPRIATE COMMUNICATION CABLEING BETWEEN THE NEW MXL CONTROL UNIT AND THE EXISTING MXL CONTROL UNIT IN BUILDING 66. THE UNIVERSITY WILL PROVIDE FOR THE CONNECTION OF THE NEW DATA CABLES TO THE EXISTING MXL CONTROL UNIT.
- 6) ELEVATOR CAPTURE AND RECALL SHALL BE PROVIDED. PROVIDE AND INSTALL THE NECESSARY CONTROL MODULES FOR RECALL TO THE DESIGNATED PRIMARY FLOOR AND TO THE DESIGNATED SECONDARY FLOOR. OPERATION OF A SMOKE DETECTOR IN AN ELEVATOR MACHERY SHALL BY-PASS THE FIREFIGHTER'S ELEVATOR OVERRIDE CAPABILITIES FOR THE RESPECTIVE ELEVATOR.
- 7) ALARM SIGNALS FROM THE HEAT DETECTORS PROVIDED IN ELEVATOR MACHINE ROOMS SHALL CAUSE A POWER SHUNT TRIP FOR THE ELEVATOR POWER.
- 8) ANY FIRE ALARM SIGNAL SHALL CAUSE ALL AUDIBLE NOTIFICATION APPLIANCES TO OPERATE CONTINUOUSLY IN ACCORDANCE WITH THE UNIVERSITY'S REQUIREMENTS. ANY FIRE ALARM SIGNAL SHALL ALSO CAUSE AN ALARM SIGNAL TO BE TRANSMITTED TO THE UNIVERSITY'S RECEIVER VIA THE NEW COMMUNICATION LINK TO THE MXL CONTROL UNIT IN BUILDING 66.
- 9) ANY SUPERVISORY OR TROUBLE SIGNAL SHALL CAUSE A LOCAL ALARM AT THE FACU TO OPERATE. ANY SUPERVISORY OR TROUBLE SIGNAL SHALL ALSO CAUSE A SUPERVISORY/TROUBLE SIGNAL TO BE TRANSMITTED TO THE UNIVERSITY'S RECEIVER VIA THE MXL IN BUILDING 66.
- 10) WIRING FOR NOTIFICATION APPLIANCE CIRCUITS SHALL BE #14 AWG SOLID THIN, GREEN POSITIVE, YELLOW NEGATIVE. STROBES ONLY SHALL USE #14 AWG SOLID GRAY POSITIVE, VIOLET NEGATIVE. SIGNALING LINE CIRCUITS SHALL USE CABLE/CONDUCTORS IN ACCORDANCE WITH SIEMENS INSTALLATIONS.
- 11) ALL WIRING SHALL BE INSTALLED IN COMPLIANCE WITH THE CALIFORNIA ELECTRICAL CODE (SPECIFICALLY ARTICLE 760) AND NFPA 72, NATIONAL FIRE ALARM CODE.
- 12) NO WIRING SHALL BE EXPOSED. CONDUIT SHALL BE USED. WIRING WITHIN ENCLOSURES SHALL BE NEATLY BUNDLED AND STRAPPED OR FASTENED TO THE ENCLOSURE OR ENCLOSURE DOORS.
- 13) IN SUB-PANELS OR ENCLOSURE SURFACES, WIRING CONNECTED TO HINGED DOORS SHALL BE BUNDLED AND SLEEVED IN A FLEXIBLE PLASTIC TUBING TO PERMIT OPENING AND CLOSING OF THE DOOR WITHOUT STRAINING WIRING AND WITHOUT ABRASION OF WIRE INSULATION.
- 14) NO CABLE SHALL BE INSTALLED IN VENTILATION DUCTS OR PLENUMS WITHOUT SPECIFIC PRIOR WRITTEN APPROVAL OF THE UNIVERSITY'S REPRESENTATIVE.
- 15) NO CLASS 2 OR 3 SIGNAL WIRING SHALL BE INSTALLED IN CONDUIT WITH LIGHT, POWER, OR CLASS 1 SIGNAL WIRING.
- 16) ALL WIRING, EXCEPT WIRING INSIDE ENCLOSURES, SHALL BE CABLED WITH A THERMOPLASTIC INSULATION JACKET, WITH A VOLTAGE RATING EXCEEDING THE VOLTAGE OF ANY POWER IN PROXIMITY TO THE WIRING.
- 17) ALL SIGNAL WIRING SHALL BE OPERATED AT NOT MORE THAN 30 VOLTS, AC OR DC.
- 18) THE DESIGN SHOWS THE NEW MXL, MXL AND PS-35 POWER SUPPLIES AS THE SOURCE OF POWER FOR ALL OCCUPANT NOTIFICATION APPLIANCES. IF ADDITIONAL OR REMOTE, POWER SUPPLIES ARE NECESSARY (OR DESIRED) BY THE SUBCONTRACTOR TO ACCOMMODATE (LONG RUNS) TO ADEQUATELY POWER ALL NOTIFICATION APPLIANCES, THEY SHALL BE PROVIDED AND INSTALLED BY THE SUBCONTRACTOR AT NO ADDITIONAL COST TO THE UNIVERSITY. ANY NEW OR SECOND POWER SUPPLY MUST BE IN ACCORDANCE WITH THE MANUFACTURER'S LISTINGS AND APPROVALS AND MUST BE APPROVED BY THE UNIVERSITY.
- 19) THE DESIGN PROVIDES UNIQUE FEATURES FOR HVAC FAN SHUTDOWN AND FIRE/SMOKE DAMPER OPERATION (AND ALSO PROVIDES A FAN SHUTDOWN DAMPER CLOSING PANEL). REFER TO APPROPRIATE FUNCTION CHART FOR THESE FEATURES.
- 20) ANY FIRE ALARM DEVICE LOCATED IN A CONCEALED LOCATION (E.G. ABOVE "FLOATING" OR "CLOUD" CEILINGS SHALL BE PROVIDED WITH A REMOTE ALARM INDICATOR. THE REMOTE ALARM INDICATOR SHALL BE LOCATED IN A READILY VISIBLE LOCATION IN THE VICINITY OF THE CONCEALED DEVICE.
- 21) THE PRIMARY FLOORS FOR ELEVATOR RECALL SHALL BE 1ST FLOOR AND 5TH FLOOR FOR ELEVATORS #1 AND #2, RESPECTIVELY. THE SECONDARY FLOORS FOR ELEVATOR RECALL SHALL BE 3RD FLOOR AND 1ST FLOOR FOR ELEVATORS #1 AND #2, RESPECTIVELY.
- 22) REFER TO DRAWING FA-102 FOR THE HAZARDOUS MATERIAL SPILL ALARM AND OXYGEN SENSOR ALARM SYSTEMS.

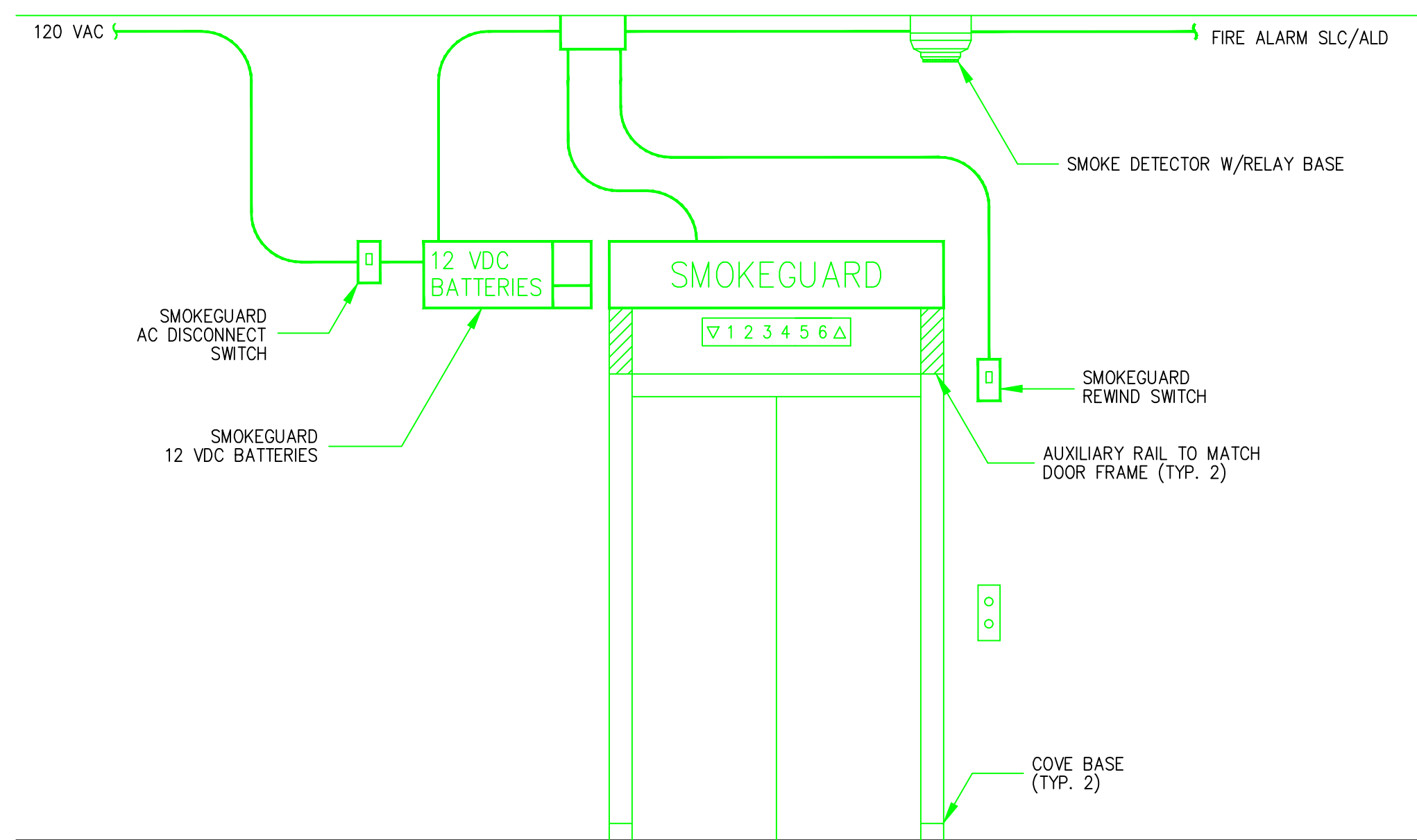
MXL/MXLR ENCLOSURE - DETAIL 1



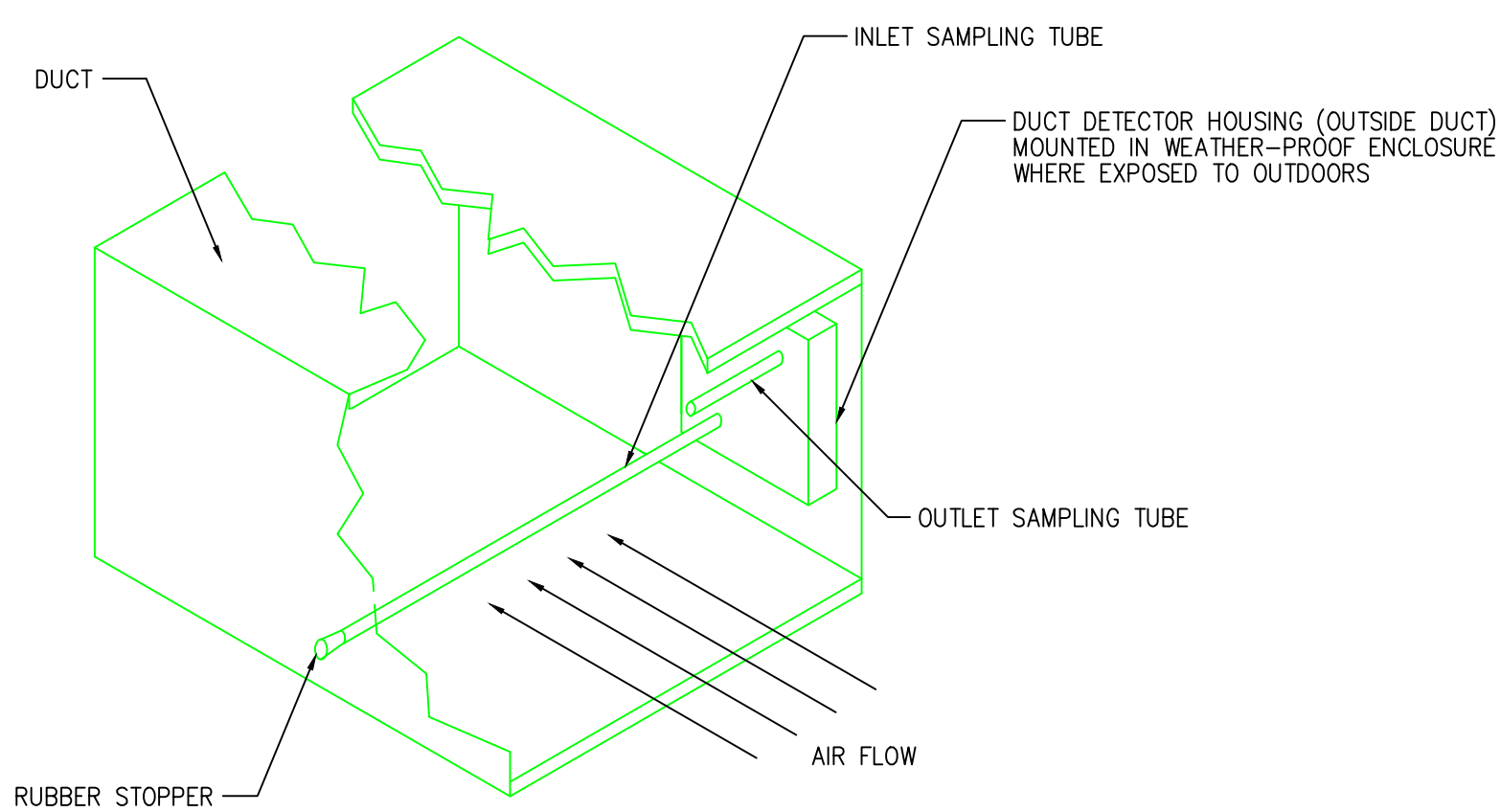
BATTERY ENCLOSURE – DETAIL 3



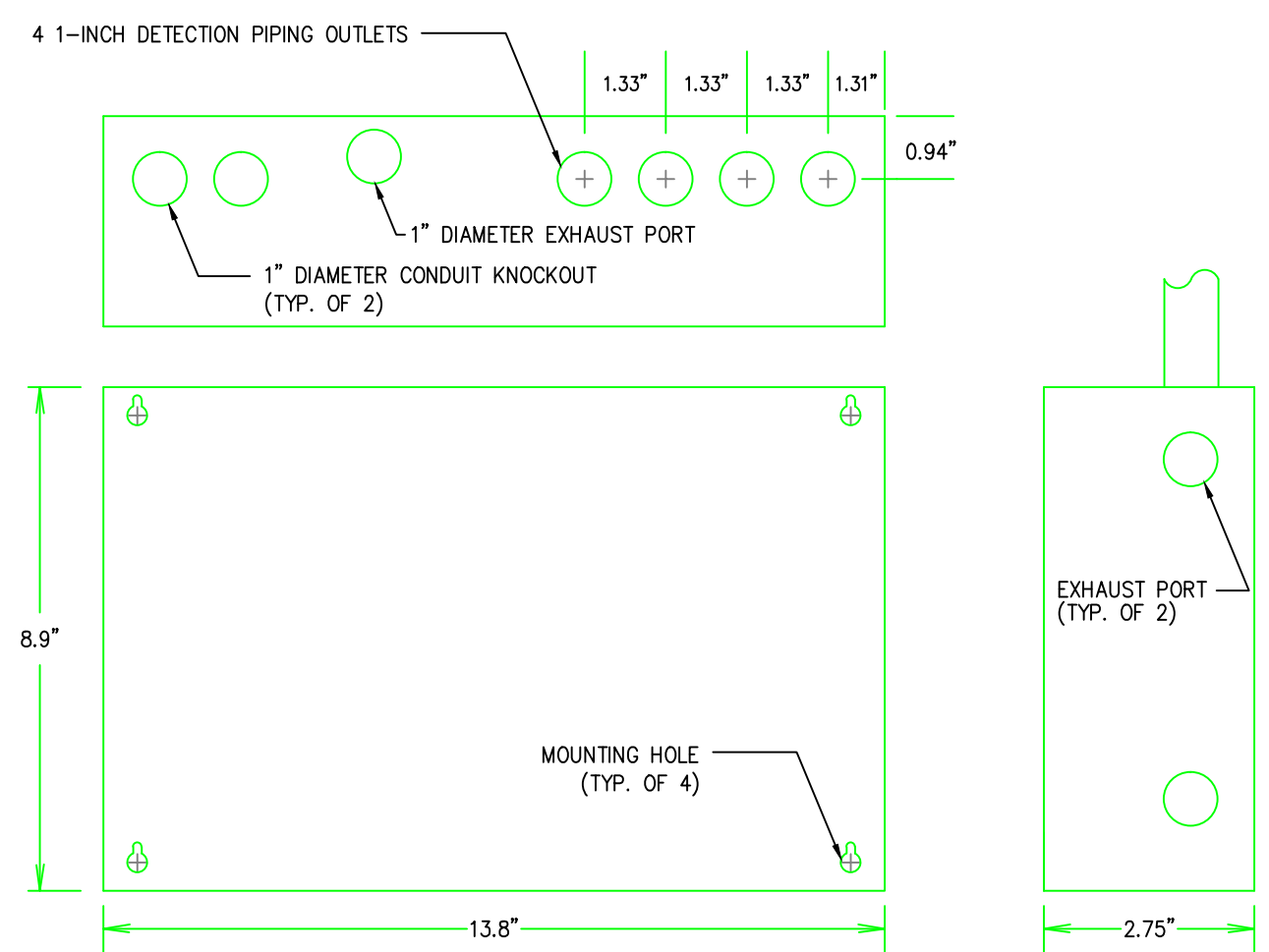
SMOKEGUARD ARRANGEMENT – DETAIL 5



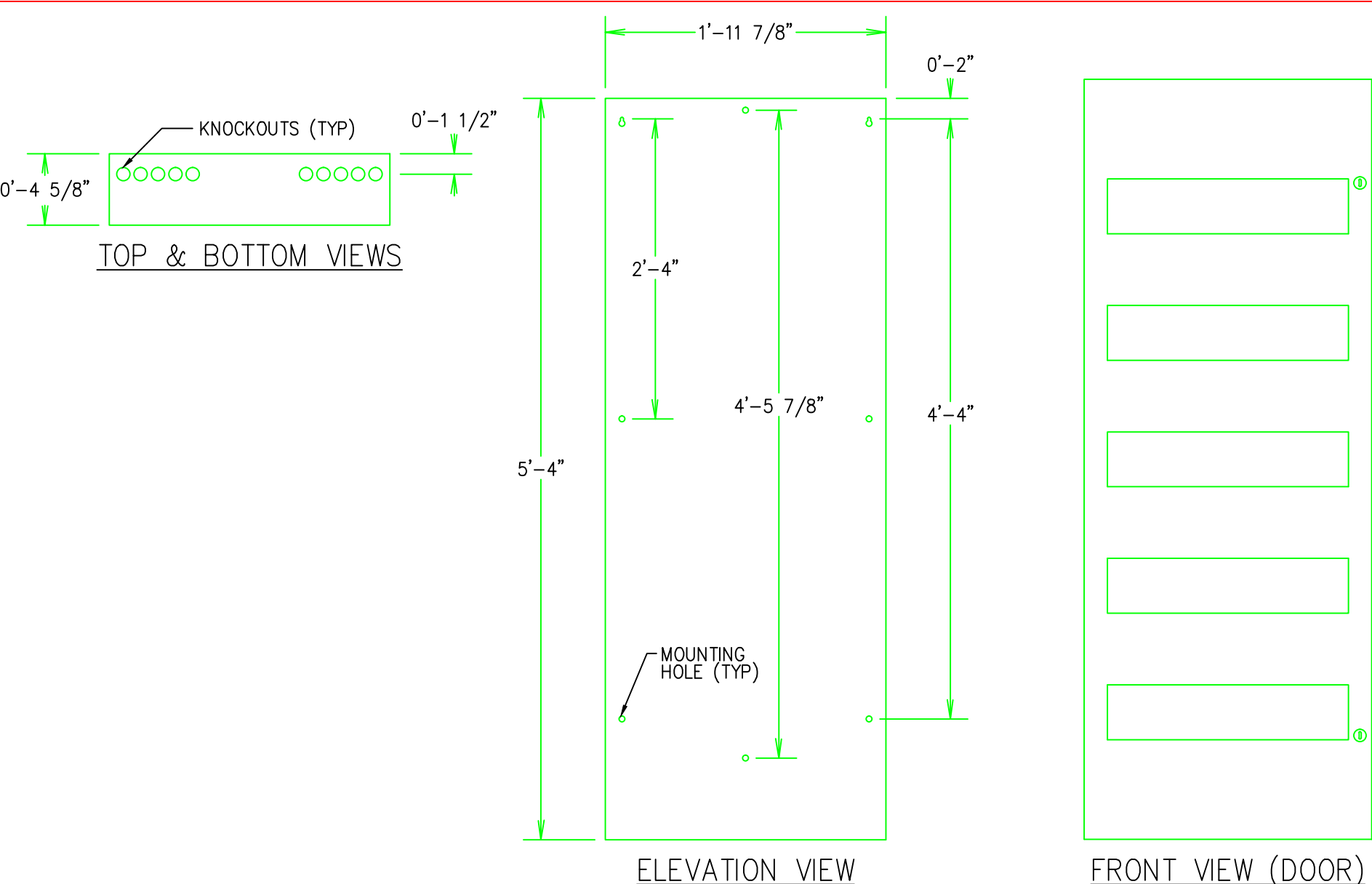
TYPICAL DUCT DETECTOR INSTALLATION – DETAIL 6



VESDA DETECTOR MOUNTING BOX – DETAIL 1



TYPICAL POWER SUPPLY PANEL – DETAIL 4



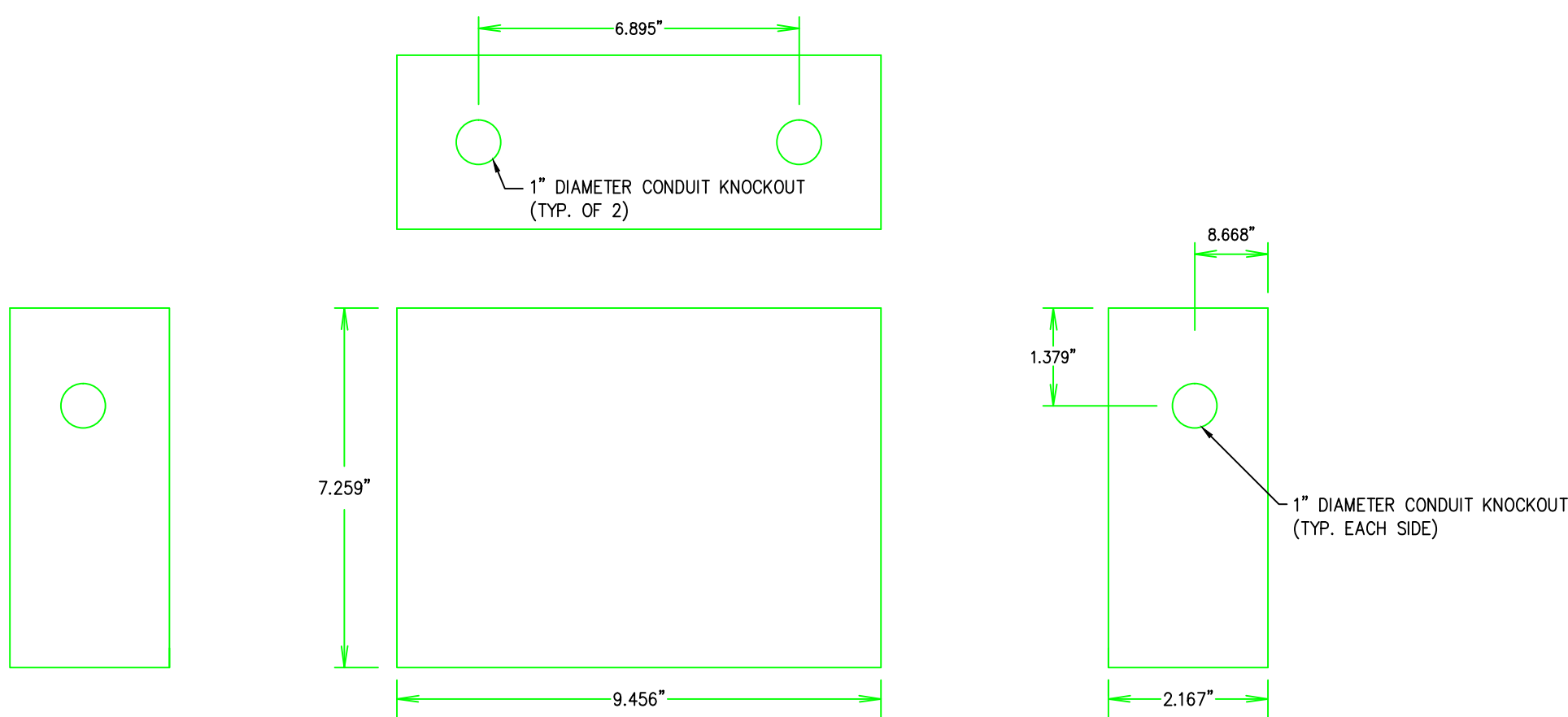
AUTOMATIC FAN SHUTDOWN AND DAMPER FUNCTION CHART

SYSTEM EVENT	RESPONSE				
	ANNUNCIATE EVENT AT FANU				
	FIRE SIGNAL TO LINE RECEIVER				
	OPERATE NOTIFICATION APPLIANCES				
	SHUTDOWN FAN UNIT IN ALARM (SEE NOT 1)				
					CLOSE RESPECTIVE FIRE/SMOKE DAMPERS
					FANS BL-001 & BL-006 TO TAIL EXHAUST
UTILITY BUILDING DUCT SMOKE DETECTOR (AT SUPPLY FANS)	●	●	●	●	
HSSD LABORATORY BUILDING SUPPLY FANS AHU-1 & AHU-2 (WHILE FAN OPERATING)	●	●	●		●
HSSD LABORATORY BUILDING SUPPLY FANS AHU-1 & AHU-2 (WHILE FAN NOT OPERATING)	●	●	●	●	
HSSD CLEAN ROOM SUPPLY FAN (AHU-3)	●	●	●	●	
HSSD CLEAN ROOM SPACE	●	●	●	●	
HSSD INTERSTITIAL SPACES (ABOVE CLEAN ROOM AND CHASES)	●	●	●		

NOTE 1: AUTOMATIC FAN SHUTDOWN FOR AHU-1, AHU-2 & AHU-3 OCCURS ONLY AFTER A 30 SECOND TIME DELAY FOLLOWING THE APPROPRIATE ALARM.

NOTE 2: THIS FUNCTION CHART IDENTIFIES AUTOMATIC FAN SHUTDOWN AND DAMPER CLOSING ACTIONS, ONLY. REFER TO THE FUNCTION CHART ON FA0.6 FOR MANUAL FAN SHUTDOWN AND DAMPER CLOSING ACTIONS RESULTING FROM THE FAN SHUTDOWN DAMPER CLOSING PANEL.

VESDA DETECTOR INTELLIGENT INTERFACE ENCLOSURE – DETAIL 2


























FIRE ALARM FUNCTION CHART

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NOTE 1: THE WON DOOR PROTECTING THE 5TH FLOOR EAST STAIR OPERATES ONLY UPON ALARM OF ANY ALARM INITIATING DEVICE LOCATED ON THE 5TH FLOOR EAST OF THE 2 HR HORIZONTAL SEPARATION.

FIRE ALARM SYSTEM LEGEND

L1-01		SMOKE DETECTOR, ADDRESS AS NOTED		HIGH SENSITIVITY SMOKE DETECTOR (HSSD)
L1-02		DUCT SMOKE DETECTOR, ADDRESS AS NOTED		HSSD SAMPLE PIPING AND SAMPLE ORIFICE
L1-03		FIRE CALL BOX, ADDRESS AS NOTED		ROLL-UP DOOR RELEASE (INSTALLED UNDER SEPARATE SECTION)
L1-04		SMOKE DETECTOR WITH REMOTE INDICATOR, ADDRESS AS NOTED		FIRE SMOKE DAMPER (INSTALLED UNDER SEPARATE SECTION)
L1-04		SMOKE DETECTOR WITH RELAY BASE, ADDRESS AS NOTED		END-OF-LINE DEVICE
L1-04		SIDEWALL MOUNTED SMOKE DETECTOR, ADDRESS AS NOTED		JUNCTION BOX
		FIRE ALARM SYSTEM CONTROL UNIT (MRL)		FIRE ALARM CONDUIT (3/4-INCH UNLESS OTHERWISE NOTED)
V-01 15 cd		STROBE, APPLIANCE NUMBER & MINIMUM CANDELA RATING AS NOTED		FIRE ALARM CIRCUIT IDENTIFICATION
A-01 110 cd		HORN/STROBE, APPLIANCE NUMBER AND MINIMUM CANDELA AS NOTED		
A-01		HORN, APPLIANCE NUMBER AND MINIMUM CANDELA AS NOTED		
		REMOTE COMMAND CENTER (RCC-2)		
L1-05		FIRE SPRINKLER VALVE SUPERVISORY SWITCH, ADDRESS AS NOTED		
L1-06		FIRE SPRINKLER WATERFLOW SWITCH, ADDRESS AS NOTED		
		DOOR HOLDER (INSTALLED UNDER SEPARATE SECTION)		
		INTELLIGENT INTERFACE MODULE		

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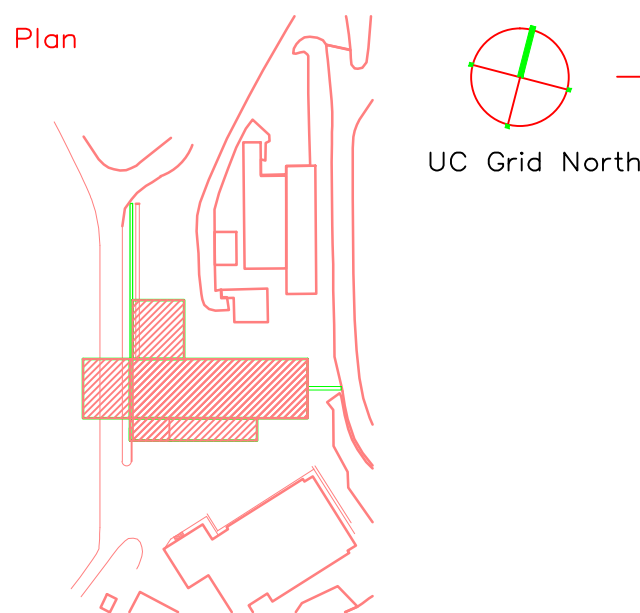
Seals and Signatures

RECORD DRAWINGS

SPECIAL NOTE:
THE INFORMATION SHOWN IN THIS
DRAWING WAS DEVELOPED USING THE
RECORD DRAWINGS PROVIDED BY SIEMENS
BUILDING TECHNOLOGIES, INC. FOLLOWING
THE COMPLETION OF THIS PROJECT
(IDENTIFIED AS JOB NUMBER 107739,
SHEETS 1 THROUGH 24) AND SHOULD BE
REFERENCED FOR INFORMATION.

LBNL Project Title	LBNL Building Number

Key Plan



Drawing Title

Scale

SG Project Number	LBL Project Number
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Drawing Number 1 OF 20

LBNL Drawing Number IFB 84